REMARKS

Entry of the foregoing amendments, and reexamination and reconsideration of the subject application, pursuant to and consistent with 37 C.F.R. § 1.104 and § 1.112 and the Request for Continued Examination filed herewith, and in light of the following remarks, are respectfully requested.

Amendments

Claims 1 and 8 have been amended to correct typographical errors. Claim 1 also amended to more particularly recite the reflectance range, and Claims 1 and 9 to include the compositions of previously cancelled claim 5. No new matter is presented.

Rejection under 35 U.S.C. 112[2]

The amendment to correct "resin and" in claim 1 overcomes this rejection.

Rejection under 35 U.S.C. 112[1]

The rejection of claims 1, 2, 4, 6, 8, 11, and 12 hereunder regarding the recited range of transmission of visible light is respectfully traversed.

The rejection alleges that the specification supports only the particular reflectance values exemplified in the specification, and also there is no support for claiming a reflectance within the values exemplified in the specification.

> The fact that some experimentation is necessary does not preclude enablement; what is required is that the amount of experimentation "must not be unduly extensive." *Atlas Powder Co. v. E.I. DuPont De Nemours & Co.*, 750 F.2d 1569, 1576, 224 USPQ 409, 413 (Fed. Cir. 1984). The Patent and Trademark Office Board of Appeals summarized the point well when it stated:
>
> > The test is not merely quantitative, since a considerable amount of experimentation is permissible, if it is merely routine, or if the specification in question provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed to

> enable the determination of how to practice a desired embodiment of the invention claimed.

Ex parte Jackson, 217 USPQ 804, 807 (1982).

> In this case, the district court was justified in finding that undue experimentation would not be required to make an embodiment of the '886 patent **having the same composition and transmittance properties** as SMG. One of the examples in the specification describes a **glass** containing no cerium, but having a lower redox ratio and a higher iron content than SMG. The specification teaches that as the iron content of the glass is reduced and the redox ratio rises, the glass transmits more ultraviolet radiation. A person reading the specification could therefore start with the no-cerium example and make a glass similar to SMG by simply lowering the iron content and allowing the redox ratio to rise until the ultraviolet transmittance reached the 31 percent limitation.

PPG Industries Inc. v. Guardian Industries Corp., 37 USPQ2d 1618, 1623, (Fed. Cir. 1996) (bold emphases added). In the present application Examples 1 and 2 provide, respectively, Indium-Tin-Oxide and Antimony-containing-Tin-Oxide coatings on different glasses, the coatings made at 350°C and 600°C, and the thicknesses of the coatings being 4000Å and 2500Å.

The rejection provides no reasoning *why* the specification is not enabling given the specific disclosure of reflectance values for visible light 12% and 19% for the respective compositions (ITO and SbTO) and a description at page three (lines 20-21) of an average reflectance of about 15% or less for visible light. The allegation made in the previous final rejection that "about 15%" is not substantiated by any reasoning is controverted by the values shown in the examples, Table 1, and the description at page three.

> "Mere comparison of ranges is not enough, nor are mechanical rules a substitute for an analysis of each case on its facts to determine whether an application conveys to those skilled in the art the information that the applicant invented the subject matter of the claims. In other words, we must decide whether the invention appellants seek to protect by their claims is part of the invention that appellants have described as theirs in the specification."

In re Wertheim, 191 USPQ 90, 97 (C.C.P.A. 1976). The present rejection does not explain why the specification does not convey to one of ordinary skill reading the same that applicants had possession of coatings having reflectance values between 12% and 19% (or even "about 15%"). The examiner is invited to cite additional art, or provide a declaration under §1.104(d)(2), in support of the allegation that the claim is not supported by the specification.

> When rejecting a claim under the enablement requirement of section 112, the PTO bears an initial burden of setting forth a reasonable explanation as to why it believes that the scope of protection provided by that claim is not adequately enabled by the description of the invention provided in the specification of the application; this includes, of course, providing sufficient reasons for doubting any assertions in the specification as to the scope of enablement. If the PTO meets this burden, the burden then shifts to the applicant to provide suitable proofs indicating that the specification is indeed enabling.

In re Wright, 27 USPQ2d 1510, 1513 (Fed. Cir. 1993); *In re Dinh-Nguyen*, 181 USPQ 46 (C.C.P.A. 1974) (assertion that enabling disclosure is not commensurate in scope with protection sought must be supported by evidence or reasoning substantiating doubts so expressed). It has been argued that "about 15%" and the example values of 12% and 19% for the reflectance provide support for the claimed range of 12% (or more) to 19% (or less). The rejection does not set for any explanation why the scope of the claim is not adequately enabled, nor what sort of evidence is lacking. Accordingly, this rejection should be withdrawn.

Prior Art

Prior to addressing the substance of the rejections, applicants would first characterized the art cited.

Taga (GB 2122919) is directed to a coating that both shields against IR and suppresses the reflection of heat waves into the environment (abstract;

page one, last paragraph). The suppression of the reflection is achieved by absorbing incoming IR radiation by having multiple IO (Indium-Oxide) layers with differing amounts of Sn, some including only IO (no added tin, antimony, fluorine, or other element), so that "each layer manifests maximum infrared absorption over a different range of wavelengths"; hence, IR shielding is provided by absorbing IR radiation (page two, ln. 37-45 and 54-60). The multiple layers effectively absorb the IR radiation reflected from other layers (page 3, ln. 26-37; less tin means higher absorbtion). This leads to a problem of "excessive internal temperature increase"; but the lamination is provided on the surface and is "exceedingly thin" and so easy to cool through heat exchange with the atmosphere (page 3, ln. 38-43).

Friedman discloses protective film for glazing and for sandwiched glass plates, but is distinctly lacking in disclosure regarding the technical features of inorganic heat reflective layers such as ITO. Like Taga, the Friedman disclosure is also directed to windshields and visually transparent glazing and so is concerned with hazing and clarity (col. 3, ln. 28-39). Friedman's only concern with fire is cracking or shattering of the glass in the event of a fire, and that fire resistant materials "do not yield the optical clarity necessary for the visually transparent glazing applications" (col. 1, ln. 17-27).

Rejection under 35 U.S.C. 103

The rejection of claims 1, 2, 4, 6, and 9-12 as obvious over the combination of Taga and Friedman is respectfully traversed.

The rejection cites the abstract and column six (ln. 18-29) of Friedman for the assumption that the heat reflective materials of Taga (or the instant invention) can be used for "heat reflectance." Yet this disclosure is not the same as that of "fire protection" as claimed, and must be read in connection with the

aforementioned disclosure at column one that fire resistance in connection with the Friedman device is to prevent cracking/shattering of the glass, not transmission of heat waves that would spread the fire to the other side of the glass. The only fire testing described by Friedman relates to structural integrity of the glass upon 30 minutes of fire testing under ISO 834 (top of column nine); such a test does not relate to IR transmission through the glass, but only the integrity of the glass upon continued exposure to flame. The claimed invention recites specific IR wavelengths that are reflected by the coatings to prevent combustion in an unburned area beyond the glass. Taga's disclosure of an IO layer to absorb heat means that such a product would heat up quickly in the case of a fire and thus not provide the protection provided by the claimed invention.

The coatings of Taga might be combined with Friedman because both references disclose vehicle windows, but such a combination does not render obvious the claimed invention.

The remarks in the rejection on applicants' response submitted with the RCE do not properly address the claimed limitations regarding the specific reflectances and transmittances recited. The rejection alleges that the reference (Taga) is "replete with teachings regarding the modification of the layer to alter or tailor its properties" but fails to specifically identify those teachings that would render obvious the claimed invention (§1.104(c)(2)).

More particularly, as shown above, Taga requires that certain layers absorb the incoming IR so as not to reflect the IR to the environment. In contrast, as shown in the table and marked-up Taga figures submitted with the amendment accompanying the RCE, and as recited in the claims, the claims require $\geq$ 50% reflectance for 1500nm whereas Taga has < 50% for that wavelength, and the claims require $\geq$ 70% reflectance for 2500nm whereas Taga has < 70% for that wavelength.

There is no disclosure in Taga for eliminating (or not including) layers that absorb IR because Taga intends absorb and not reflect that radiation. Note Table 1 page page seven, and lines 10-12, wherein the combination of indium-oxide and ITO provides improved heat wave absorption. Such a disclosure makes sense for a vehicle because it is unlikely that a vehicle will be in the center of a fire (engulfed in flames from the outside), and because the heat from the sun is significantly less than that from a building fire. That is why Taga realizes the problem of heat accumulation in the window, and the relatively lower heat flux from the sun can be cooled by the ambient air; such is not the case in a building fire. Taga is also not concerned with the interior of the vehicle (or its occupants) bursting into flames due to the solar heat flux, whereas the claimed fire protection glass is concerned with exactly that problem: combustion in an unburned area ignited by IR radiation transmitted through the glass. There is a distinct difference between eye-protection and fire protection: like a furnace peephole or welding mask window, there is no problem for the interior of the car to be relatively dark.

By the present amendments, the film is recited as "consisting essentially of" only those components that Taga teaches are for reflection of IR, to the exclusion of a film containing only indium oxide (no tin, no antimony, no fluorine) which Taga teaches will absorb IR radiation (*e.g.*, p. 13, ln. 64; p. 14, ln. 9).

With regard to the cases cited in the Office action, *Ex parte Linder*, 173 USPQ 356 (B.P.A.I. 1955) concerns using a known mechanical means in a new relationship, and the Board held that the claims did not define the "quick action" relationship with sufficient particularity to distinguish the cited art. In contrast, the present claims specifically recite property values (transmittance, reflectance) that *prima facie* distinguish over the cited art. In *In re Dial*, 140 USPQ 244 (C.C.P.A. 1964) the Court held that the appellant's use of a combination of stabilizers, each

separately known in the art, was not shown to be more effective or in anyway different in inhibiting degradation of a halogenated hydrocarbon. The present claims recite compositions and properties that are clearly different from those in the cited references.

What do the references collectively suggest to one of ordinary skill in the art about fire prevent? *In re Simon*, 174 USPQ 114 (C.C.P.A. 1972). Clearly, there is nothing to suggest preparing a fire protection article having the recited reflectance and transmittance properties. That Taga discloses it is possible to modify his composition for such items as furnace peepholes and welding masks is pure speculation that would be ignored by those of ordinary skill in the art, *In re Ehrreich*, 200 USPQ 504, 509 (C.C.P.A. 1979), and such a disclosure is internally inconsistent with the Taga teaching that the glass include layers that absorb heat; rather, devices such as furnace peepholes and welding mask windows are intended to decrease the transmittance of visible light to make extremely bright sources viewable (and clearly there would be no cooling of the glass on the side of the incoming heat flux in a furnace as Taga teaches his inventions functions). According to the rejection the motivation to modify Friedman comes from Taga, but that motivation and the combination does not relate to fire protection or suggest the claimed properties. *In re Murch*, 175 USPQ 89, 92 (C.C.P.A. 1972) (reversing rejection of claim 10).

> In the total absence of evidence in the record to indicate that the amber **glass** disclosed by Lyle would be expected to have desirable electrical insulating properties, we can find no justification for placing the burden on applicant to conduct experiments to determine the insulating properties of the colored glass disclosed by Lyle. Although there are only very slight differences between the Lyle composition and that sought to be patented, we cannot assume that these small differences are incapable of causing a difference in properties. **Appellant, in showing that his glass has basic and novel properties (at least as far as the record is concerned), would appear to have met his burden.**

In re De Lajarte, 143 USPQ 256, 259 (CCPA 1964) (bold emphass added). As in the present case, the claims define a heat reflection film composition and properties the excludes and distinguishes over the cited art, and particularly Taga, which is directed more towards a heat absorbing window structure than one that reflects heat. The basic and novel properties of a window structure having good reflectivity of heat waves and good transparency of visible light would not have been obvious from the cited art.

With regard to claim 8, even if double glazing is known, for which the Terneu reference is cited, that addition of that reference to Taga and Friedman, in light of the foregoing, does not render claim 8 unpatentable.

Accordingly, the prior art rejections should now be withdrawn.